

# THE AMERICAN JOURNAL OF PHYSIOLOGY

VOLUME 154

*July-September 1948*

---

## BOARD OF PUBLICATION TRUSTEES

A. C. IVY, *Chairman*

R. F. PITTS

FRANK C. MANN

## EDITORIAL BOARD

J. H. COMROE, JR.

HALLOWELL DAVIS

D. B. DILL

J. A. E. EYSTER

R. W. GERARD

F. G. HALL

W. G. HAMILTON

C. N. H. LONG

R. F. PITTS

J. P. QUIGLEY

DAVID RAPPORT

H. P. SMITH

MILTON O. LEE, *Managing Editor*

THE AMERICAN PHYSIOLOGICAL SOCIETY  
Washington, D. C.

COPYRIGHT 1948, BY  
THE AMERICAN PHYSIOLOGICAL SOCIETY, INC.

WAVERLY PRESS, INC.  
BALTIMORE, MARYLAND  
*Made in United States of America*

META  
INTER  
U  
CHOL  
VITAM  
SPECT  
W  
SHOCK  
ACUT  
ELECT  
T  
ACTIO  
M  
BRAID  
INTRA  
DESC  
V  
EFFE  
C  
ALLO  
A CO  
DESC  
C  
STAB  
CONC  
PLAT  
ABIL  
SALT  
EFFE  
MEA  
BUF

# Contents of Volume 154

No. 1. JULY 1948

METABOLISM OF THYROXINE IN THE GOAT	<i>R. A. Monroe and C. W. Turner</i>	1
INTERRELATION BETWEEN THE LENGTH OF SYSTOLE, STROKE VOLUME AND LEFT VENTRICULAR WORK IN THE DOG	<i>John W. Remington, W. F. Hamilton and Raymond P. Ahlquist</i>	6
CHOLESTEROL AND CAPILLARY PERMEABILITY	<i>Alene F. Silver</i>	16
VITAMIN D AND THE DISAPPEARANCE OF T-1824 FROM THE BLOOD	<i>Alene F. Silver and C. I. Reed</i>	19
SPECTROPHOTOMETRIC MEASUREMENT OF TRACES OF THE DYE T-1824 BY EXTRACTION WITH CELLOPHANE FROM BOTH BLOOD SERUM AND URINE OF NORMAL DOGS	<i>Thomas H. Allen and Peter D. Orahovats</i>	27
SHOCK DUE TO ELECTRICAL INJURY IN FROGS	<i>Louis Moreau, Marvin Balistocky and L. V. Heilbrunn</i>	38
ACUTE HYPERTENSION IN DOGS WITH CEREBRAL ISCHEMIA	<i>Arthur C. Guyton</i>	45
ELECTRICAL STIMULATION OF THE NEURAL MECHANISM REGULATING SPASMODIC RESPIRATORY ACTS IN THE CAT	<i>Herbert Leon Borison</i>	55
ACTION POTENTIALS IN RAT MUSCLE WITH TWITCH TENSION POTENTIATED BY KCl TREATMENT, ADRENALECTOMY, TETANUS AND TREPPE	<i>Sheppard M. Walker</i>	63
BRAIN METABOLISM IN EMOTIONAL EXCITEMENT AND IN SLEEP	<i>D. Richter and R. M. C. Dawson</i>	73
INTRACRANIAL NOVOCAIN ANESTHESIA IN FROGS	<i>Bruno Kisch</i>	80
DESCENDING NERVE FIBERS SUBSERVING HEAT MAINTENANCE FUNCTIONS COURSING WITH THE CEREBROSPINAL TRACTS THROUGH THE PONS	<i>Allen D. Keller</i>	82
EFFECT OF ALLOXAN, PANCREATECTOMY AND ADRENALECTOMY ON PLASMA AMINO NITROGEN IN THE DOG AS STUDIED BY MEANS OF HEMORRHAGE.	<i>Daniel L. Kline</i>	87
ALLOXAN DIABETES IN SHEEP UNDER FASTING AND NON-FASTING CONDITIONS	<i>Esther L. McCandless, Barbara A. Woodward and J. A. Dye</i>	94
A COMPARISON OF GLUCOSE METABOLISM AFTER HEMORRHAGE IN NON-DIABETIC, ALLOXAN DIABETIC AND DEPANCREATIZED DOGS	<i>Clarissa Hager Beatty</i>	107
DESOXYCORTICOSTERONE ACETATE AND BLOOD PRESSURE OF DOGS ON A HIGH SODIUM CHLORIDE INTAKE	<i>John E. Summers</i>	119
STABILITY OF PROTHROMBIN AND AC-GLOBULIN IN STORED HUMAN PLASMA AS INFLUENCED BY CONDITIONS OF STORAGE	<i>John L. Fahey, Arnold G. Ware and Walter H. Seegers</i>	122
CONCENTRATION OF PROTHROMBIN AND AC-GLOBULIN IN VARIOUS SPECIES	<i>Robert C. Murphy and Walter H. Seegers</i>	134
PLATELET EXTRACTS, FIBRIN FORMATION AND INTERACTION OF PURIFIED PROTHROMBIN AND THROMBOPLASTIN	<i>Arnold G. Ware, John L. Fahey and Walter H. Seegers</i>	140
ABILITY OF THE STOMACH TO PRODUCE ELECTRICAL ENERGY	<i>Warren S. Rehm and Lowell E. Hokin</i>	148
SALT EXCRETION IN DESERT MAMMALS	<i>Knut Schmidt-Nielsen, Bodil Schmidt-Nielsen and Howard Schneiderman</i>	163
EFFECT OF SODIUM SALICYLATE UPON THE URIC ACID CLEARANCE OF THE DALMATIAN DOG	<i>Meyer Friedman and Sanford O. Byers</i>	167
MEASUREMENT OF RENAL FUNCTIONS IN RATS	<i>A. C. Corcoran, Georges Masson, Ruth Reuting and Irvine H. Page</i>	170
BUFFER EQUILIBRIA AND REABSORPTION IN THE PRODUCTION OF URINARY ACIDITY	<i>Walter Menaker</i>	174

## No. 2. AUGUST 1948

PLASMA INORGANIC PHOSPHATE CONCENTRATION AND HYPERVENTILATION IN THE DOG	
<i>Gilbert S. Campbell, E. B. Brown, Jr. and Frank Gollan</i>	185
CHRONIC INANITION, RECOVERY AND METABOLIC RATE OF YOUNG RATS	
<i>F. H. Quimby, N. E. Phillips and I. U. White</i>	188
EFFECTS OF ALTITUDE ANOXIA ON RENAL FUNCTION	
<i>Roger J. McDonald and Vincent C. Kelley</i>	193
FURTHER OBSERVATIONS ON EFFECTS OF ALTITUDE ANOXIA ON RENAL FUNCTION	
<i>Vincent C. Kelley and Roger K. McDonald</i>	201
EFFECTS OF ALTERATIONS IN BODY TEMPERATURE ON PROPERTIES OF CONVULSIVE SEIZURES IN RATS	
<i>Ewart A. Swinyard and James E. P. Toman</i>	207
EXCRETION OF BILIRUBIN AND BROMSULFALEIN IN BILE	
<i>A. Cantarow, C. W. Wirts, W. J. Snape and L. L. Miller</i>	211
RENAL FUNCTION IN NORMAL RABBITS AND DOGS AND EFFECT OF URANYL SALTS	
<i>J. Henry Wills and Edna Main</i>	220
UNILATERAL ADRENALECTOMY, UNILATERAL SPLANCHNIC NERVE RESECTION AND HOMOLATERAL RENAL FUNCTION	
<i>Joseph P. Kriss, Palmer H. Fletcher and Melvin L. Goldman</i>	229
ELECTROGRAM OF TURTLE HEART STRIP IMMERSSED IN A VOLUME CONDUCTOR	
<i>Leon Churney, Richard Ashman and Edwin Byer</i>	241
EFFECTS OF CHANGES IN POSITION OF HEART OF CHICKEN ON ELECTROCARDIOGRAM	
<i>Paul D. Sturkie</i>	251
STUDY OF SIMULTANEOUS RIGHT AND LEFT ATRIAL PRESSURE PULSES UNDER NORMAL AND EXPERIMENTALLY ALTERED CONDITIONS	
<i>D. F. Opydyke, J. Duomarco, W. H. Dillon, H. Schreiber, R. C. Little and R. D. Seely</i>	258
DYNAMIC EFFECT OF INSPIRATION ON SIMULTANEOUS STROKE VOLUMES OF RIGHT AND LEFT VENTRICLES	
<i>Robert D. Seely</i>	273
CARDIODYNAMICS OF EXPERIMENTAL INTERVENTRICULAR COMMUNICATIONS	
<i>William H. Dillon and H. Schreiber, Jr.</i>	281
COMPARISON OF CARDIAC OUTPUT BY DIRECT METHOD AND HAMILTON-REMINGTON PROCEDURE	
<i>J. L. Duomarco, W. H. Dillon and C. J. Wiggers</i>	290
EXPERIMENTAL HEMORRHAGIC SHOCK; A STUDY OF ITS PRODUCTION AND TREATMENT	
<i>Otto Glasser and Irvine H. Page</i>	297
MECHANISM OF ARTERIAL PRESSURE RESPONSE TO THE VALSALVA TEST: THE BASIS FOR ITS USE AS AN INDICATOR OF INTACTNESS OF SYMPATHETIC OUTFLOW	
<i>Stanley J. Sarnoff, Esther Hardenbergh and James L. Whittenberger</i>	316
CARDIAC EFFECTS OF INTRAVENOUS INJECTION OF SMALL VOLUMES OF STRONGLY HYPERTONIC SOLUTIONS	
<i>William W. Walcott and Ingrith Johnson Deyrup</i>	328
MECHANISM OF VAGAL CARDIAC SLOWING FOLLOWING INTRAVENOUS INJECTION OF SMALL VOLUMES OF STRONGLY HYPERTONIC SOLUTIONS	
<i>Ingrith Johnson Deyrup and William W. Walcott</i>	336
NERVOUS CONTROL OF CERVICAL PORTION OF ESOPHAGUS	
<i>Kao Hwang, M. I. Grossman and A. C. Ivy</i>	343
EFFECT OF SECRETIN AND PANCREOZYMIN ON AMYLASE AND ALKALINE PHOSPHATASE SECRETION BY PANCREAS IN DOGS	
<i>C. C. Wang, M. I. Grossman and A. C. Ivy</i>	358

## No. 3. SEPTEMBER 1948

DERIVATION OF LEADS I AND III IN THE DOG FROM AN ANALYSIS OF SIMULTANEOUSLY RECORDED LEADS VR, VL, AND VF	
<i>L. H. Nahum, H. M. Chernoff and W. Kaufman</i>	369
RELATIVE DISTRIBUTION OF CARDIAC OUTPUT IN ACUTE HYPOKEMIA	
<i>M. Feldman, Jr., S. Rodbard and L. N. Katz</i>	391

	NATURE OF THE TWO PRESSOR RESPONSES TO ACUTE HYPOXEMIA WITH SOME OBSERVATIONS ON THE ROLE OF THE ADRENALS IN HYPOXIA	<i>A. Van Loo, A. Surtshin and L. N. Katz</i>	397
185	LUNG FUNCTION STUDIES. II. THE RESPIRATORY DEAD SPACE	<i>Ward S. Fowler</i>	405
	ROLE OF THE VAGI IN THE CROSSED PHRENIC PHENOMENON	<i>Paul O. Chatfield and Sedgwick Mead</i>	417
188	BLOOD SUGAR AND DEXTROSE TOLERANCE DURING ANOXIA IN THE DOG	<i>J. Clifford Stickney, David W. Northup and Edward J. Van Lier</i>	423
193	ROLE OF THE HERRING-BREUR REFLEX UNDER DEEP PENTOTHAL ANESTHESIA	<i>J. C. Scott, E. A. Reed, D. Saris and H. P. Redondo Ramirez</i>	428
201	PROPRIOCEPTIVELY INDUCED REFLEX PATTERNS	<i>G. N. Loofbourrow and E. Gellhorn</i>	433
207	ROLE OF CARBON DIOXIDE AND OF THE HINDBRAIN IN AGENE-INDUCED CANINE EPILEPSY	<i>Maurice L. Silver and George H. Pollock</i>	439
211	ADAPTATION TO EXPERIMENTAL MOTION SICKNESS IN DOGS	<i>R. L. Noble</i>	443
220	EFFECT OF ELECTRICAL STIMULATION UPON ATROPHY OF PARTIALLY DENERVATED SKELETAL MUSCLE OF THE RAT	<i>A. J. Kosman, E. C. Wood and S. L. Osborne</i>	451
229	DISSOCIATION OF POTASSIUM AND ACETYLCHOLINE SENSITIVITY OF FROG MUSCLE PRODUCED BY ISOTONIC GLUCOSE	<i>E. Vanremootere</i>	455
241	PLASMA PROTEIN CONCENTRATIONS AND ORGAN WEIGHTS OF CASTRATED AND TESTOSTERONE PROPIONATE TREATED RATS	<i>James H. Leatham</i>	459
251	MECHANISMS OF DESOXYCORTICOSTERONE ACTION. II. RELATION OF SODIUM CHLORIDE INTAKE TO FLUID EXCHANGE, PRESSOR EFFECTS AND SURVIVAL	<i>D. M. Green, D. H. Coleman and M. McCabe</i>	465
258	COMPARISON OF CYCLOPROPANE AND ETHER ANESTHESIA ON LYMPH PRODUCTION	<i>Henry K. Beecher, Madeleine F. Warren and Anna Murphy</i>	475
273	ALKALI THERAPY OF AMMONIUM CHLORIDE ACIDOSIS IN DOGS	<i>Howard W. Robinson, Esther M. Greisheimer, Morton J. Oppenheimer and Waldo E. Nelson</i>	480
281	EFFECT OF HIGH PROTEIN AND HIGH CARBOHYDRATE DIETS ON THE ARGINASE AND PHOSPHATASES OF THE LIVER AND KIDNEY OF THE NORMAL AND ADRENALECTOMIZED RAT	<i>Charles D. Kochakian, Mary N. Bartlett and Jean Moe</i>	489
290	CHOLINESTERASE LEVELS IN PLASMA AND TISSUES	<i>Bruno Mendel, Rosemary D. Hawkins and Margaret Nishikawara</i>	495
297	NUTRITIVE VALUE OF FRUCTOSE FOR RATS AND EFFECTS PRODUCED ON ITS UTILIZATION BY THIAMINE	<i>Curt P. Richter</i>	499
316	EFFECT OF CERTAIN CHOLERETIC AGENTS ON EXCRETION OF PIGMENT AND BROMSULFALEIN IN BILE	<i>A. Cantarow, C. W. Wirts, W. J. Snape and L. L. Miller</i>	506
328	CHOLINE AND THE PRODUCTION OF POLYCYTHEMIA BY COBALT IN THE RAT	<i>Mary C. Bucciero and James M. Orten</i>	513
336	SOME PHYSIOLOGICAL EFFECTS ASSOCIATED WITH CHRONIC CALORIC RESTRICTION	<i>Roswell K. Boutwell, Miriam K. Brush and Harold P. Rusch</i>	517
343	STUDY OF IN VITRO METHODS FOR THE DEMONSTRATION OF ISO-AGGLUTINATION WITH THE BLOODS OF NORMAL AND OF ILL DOGS	<i>Angie S. Hamilton</i>	525
358	MECHANISM OF PROTEINURIA EFFECT OF PARENTERAL BOVINE ALBUMIN INJECTIONS ON HEMOGLOBIN EXCRETION IN RATS	<i>Richard W. Lippman</i>	532
369	SALYRGAN AND RENAL TUBULAR SECRETION OF PARA-AMINOHIPPURATE IN THE DOG AND MAN	<i>Robert W. Berliner, Thomas J. Kennedy, Jr. and James G. Hilton</i>	537
391	RENAL GLUTAMINASE	<i>E. Mylon and J. H. Heller</i>	542

## CORRIGENDA

*Volume 151, page 30, lines 4 and 6.* The dissociation constant should read  $2 \times 10^{-6}$  instead of  $2 \times 10^{-3}$ .

*Volume 152, page 340.* Under table 2, top, right-hand column, "coronary, mean  $\pm \sigma_m$ ", the first entry should read:  $13.0 \pm .54$  instead of  $13.0 \pm 5.4$ .

*Volume 154, page 37.* Insert the following paragraph before SUMMARY AND CONCLUSIONS:

Finally, in connection with a discussion of T-1824 clearance, it is interesting and informative to note the tabulated data of electrophoretic studies on T-1824 and protein in urine of human nephrosis (17). Although it is not stated how dye was measured in nephrotic urine, the T-1824 clearance was 0.37 ml. per minute per square meter of body surface, the albumin clearance was 0.39 while total protein clearance was 0.09. The globulin clearance of 0.03 was very small indeed. Luetscher (17) preferred in 1944 to compare dye with total protein clearance, but since the clearances for T-1824 and serum albumin were nearly equal and considerably greater than that of globulin it is probable that the dye was excreted in the form of dye albumin. In nephrosis, then, the kidney behaves as though injected dye combined selectively with serum albumin leaving vanishingly small amounts of free dye in the blood. On the basis of body surface area a human nephrotic can have a dye clearance 100 times greater than that of a normal dog. This again suggests that dye clearance when analyzed by a sensitive method is a measure of normally occurring albumin clearance.

of  
rst

m-  
of  
ne,  
nin  
was  
ar-  
id-  
of  
se-  
On  
er  
n-